THURSDAY, SEPTEMBER 29, 1870

HOUSE ACCOMMODATION FOR LEARNED SOCIETIES

THE movement which originated with the Statistical Society about three months ago for bringing under the shelter of one roof various learned societies of the metropolis, has already made that progress which gives the best assurance of ultimate success.

The "Learned Societies' Accommodation Committee" is at present constituted by delegates from the undermentioned bodies:—The Anthropological Society; the British Archæological Association; the East India Association; the Ethnological Society; the Institute of Actuaries; the Iron and Steel Institutes; the Juridical Society; the Meteorological Society; the Photographic Society; the Royal Colonial Institute; the Society of Arts; the Social Science Association and Law Amendment Society; the Statistical Society; and the Victoria Institute.

Each of these Societies is represented on the Committee by one delegate. The President of the Statistical Society, Mr. Newmarch, has been chosen chairman, but as this Society had already a delegate, the Chairman has no vote, otherwise the Society would have two voices at the Board, while the others were restricted to one each.

The Committee reserve to themselves the "power to add representatives from other learned Societies." By this resolution the combining societies may be increased, and probably will be, as the scheme approaches nearer accomplishment.

One body named in the list above has so large a fellowship, and so wide a scope in its objects, that its wants are consequently great and peculiar. The Society of Arts is likely to need house room in, we believe, a year or two. This society, Mr. Le Neve Foster remarks, would require "all the room we have at present and something more." When their extensive premises in the Adelphi are brought to mind, it is at once felt that Mr. Foster's society stands apart by the magnitude of its essential wants from all the others just named. To a certain degree the needs of the Society of Arts do not accord with the humbler demands of the other societies. The latter may be housed in a moderately capacious building, with a common meeting room or theatre, capable of accommodating from 150 to 200 members. Hence, these smaller scientific bodies offer a much easier undertaking to organise and manage. In London the difficulties of obtaining an appropriate site are enormously multiplied by any large increase of required frontage. On the other hand, the union of the Society of Arts with the other learned bodies presents the opportunity of a bolder enterprise. A comprehensive project for lodging all the London societies lacking house-room in one mansion is, doubtless, an attractive idea to many minds. Thus, it would appear at first sight, that, under these circumstances, two courses emerge: a moderate plan, with proximate execution, for the smaller societies; a grander scheme, with, in all probability, indefinitely remote accomplishment.

The Committee have avoided, by the unanimous resolutions of the 1st July, any conflict between these views. They have resolved in effect:

1. That convenient and permanent accommodation should be provided in a distinct building for societies that do not require extensive museums and libraries.
2. That the Committee express their earnest desire to co-operate with societies requiring larger accommodation for libraries and museums, either by "a combined application to Government for a site or building, or by joint action for the purchase of a convenient site."

The Committee think that if the wider co-operation spoken of in the second resolution should be successful, the plan for the smaller societies "may be either treated as a separate block in an associated group of buildings, or as a constituent part of one large building."

The Committee have taken the necessary step of giving instructions for the preparation by a competent architect of sketch plans and the elevation of a building adapted to the requirements of the smaller societies. These plans, it is understood, will be laid before the Committee when it re-assembles in October. Further, the Committee determined that the first subject for consideration at their next meeting "be the appointment of one or more of its members to represent its view and wishes to *The Aid to Science Commission*."

If, eventually, only the smaller scheme be adopted, it is thought the cost of the whole building and the purchase of the site could be compassed by an outlay which would offer no pecuniary impediment. In the absence, however, of working plans any stated sum can only be regarded as roughly approximate. The site itself may prove a business not so easily dealt with. Position is a matter of such precious importance to the utility of the undertaking that it is not likely to be undervalued—success or failure very much hangs upon the local habitation.

The proceedings of the committee seem to have been thus far, prompt and business-like. We have no doubt, therefore, that their efforts to economise the resources, and thereby augment the utility of the scientific societies of the metropolis, will speedily bear good fruit.

THE BERLIN WORKING MEN'S CLUB

FOR some years past there has been carried on at Berlin a Working Men's Club (for so it seems best to translate *Der Berliner Handwerker Verein*), established, we are told in its Reports, by working men and friends of labour, in order to promote general culture, sound technical knowledge, and good manners, among its members. This it attempts to do by means of popular lectures, classes for serious instruction, gymnastics, a library and reading-room well stocked with books and journals, concerts and social gatherings, or pleasure parties in which the wives and children of members take part. In many respects it resembles our own Mechanics' Institutes and Working Men's Clubs; but there are several features deserving special attention.

Not the least noteworthy point about it is its success. The average number of members at any one time is about 4,000, of whom nine-tenths at least are *bonâ fide* working men; but owing to the migratory habits of the German artizans, no less than 10,000 names are placed on their books every year. Well worthy of attention is the essentially democratic nature of the constitution and management. It is founded on the principle of self-help;

every man over 17 years of age, and unconvicted of crime, is eligible for membership, and after election continues to be a member so long as he pays his three silver groschen (somewhat less than 4*d.*) every month. The affairs are not conducted *for* the members by the philanthropic nobility, clergy, and gentry of the place, but *by* the members, through a representative assembly chosen annually, two-thirds at least of whom must be engaged in trade, and through a triennial committee, two-thirds of whom must also be engaged in trade. There is also a president, with vice-presidents, and a teacherhood, chosen either directly or indirectly by the members.

Yet in spite of, or rather perhaps because of, this working of self-help, they are enabled to enrol among their members, and receive active support from, the best and most active minds of Berlin. The leading professors of the University, the energetic young literary and scientific men of the city, the chief men of industry and commerce, all come forward to help them; and in their lists of popular lectures we find many names of European reputation.

The lectures, free to all members, and delivered in the club building, are intended to stir up the minds of the members to what is going on around them; while all those who are alert to the value of knowledge have access, on the payment of a small fee, to classes in which such subjects as reading, writing, arithmetic, geometry, mechanics, book-keeping, &c. &c., are taught in a thoroughly earnest and business-like manner. There are, besides, technical practical classes in construction and architecture; and the managers, having very definite views about play and work, take the greatest care that the musical and social gatherings shall be eminently successful in giving delight, and helpful in building up those "good manners" which are so desirable.

Then again, it is thoroughly catholic in spirit. It belongs to no religious or anti-religious party, advocates no political views, democratic, socialistic, or conservative; and, in fact, has no shibboleth of any kind whatever. It does not try to introduce serious learning and sound knowledge under false pretences. It does not call its members together to hear music, and then give them the stones of science. Every one can do as he likes. If he desire solid knowledge, there it is. If he care only for music or for a promenade, he can listen to the very best of the former, and walk about on fixed days among a crowd of comrades, all bent on pretending to be happy. He may, if he like, take out the whole of his monthly three groschen worth in abundant exercise on the parallel bars. So long as in any wholesome way the heavy burden of the artizan's daily life is lessened, and his dull life lighted up, the club thinks that it has in a measure accomplished its ends.

We imagine that most of our readers have read the article by Mr. James Stuart in No. 3 of NATURE, and they who have any experience of English workmen will, we venture to think, agree with nearly all that is there laid down. Putting together the burden of that article and the Report of this Berlin Working Men's Club, the question naturally suggests itself, Could we not in England do as much and a great deal more than is done in Berlin? It is one of the qualities of science, that he who has any is always anxious to give to others; and there surely could be no difficulty in establishing in London and in other large cities scientific teacherhoods willing to hold out the right hand of fellowship to all working men's clubs which were felt to be really acting on the principle of self-help.

There are many excellent and flourishing working men's clubs in London and elsewhere, and more than one working men's college. But we believe we are not going beyond the truth in stating that they lack the catholicity of the Berlin society. They are not all free from the suspicion of *arrière pensée* of some kind or other. Moreover, as separate institutions they tend to distract efforts, and cannot make a united appeal to the whole body of scientific men; while some of them at least are worked from above, the principle of dependence being more conspicuous than that of self-help. And so it comes to pass that those who are eager for knowledge have to struggle on without the counsel which they might otherwise share, often drawing their truth from wells by no means undefiled, and the dull unawakened multitude but rarely hear the voices which might rouse them from their sleep, and which now are wasted on the listless ears of fashionable audiences.

It is true that our scientific men are burdened far more than their German brethren with work undertaken for the sake of getting their daily bread, and for that alone; and so far unremunerative labour is to them a double task. But we have no doubt that, in spite of this, many would be led to come forward by the strong convictions they have that the welfare of their countrymen and their country is tottering for the lack of knowledge. By means of a little organisation, in which our artizans are pre-eminently skilled, much work might be got out of such teacherhoods, with the least possible wear and tear. They might deliver occasional lectures both for instruction and for rousing attention; but their chief use would be to advise the various clubs in their more serious work of class instruction, directing their studies, and assisting them in the selection of teachers.

Far be it from us to throw the slightest obstacle in the way of imperial secular education; but while waiting for the good time coming—in which the ladder of learning, from the lowest to the topmost rung, shall be free to every man, of every rank—much lies in the hands of the working men themselves. Let them show that they are ready for instruction, and have adopted the principle of self-help, and we believe that they will find scientific men ready to meet them half-way. It will not cost the workmen much to establish schools; it will not cost the teacherhood very much to give counsel; and the machinery for the payment of the actual class teachers is already in large measure provided for by the Science and Art Department of the Government.

The lamentable war that is now desolating some of the fairest provinces of Europe, and the unproductive current in which the energies of all Germans are at present conducted, must necessarily throw back this movement on the Continent. As long as we hear of peasant and professor working together in the field and on the ramparts, we cannot expect that they will also co-operate in the pursuit of scientific knowledge. But when this war-cloud has passed away, when France and Germany alike again turn to the arts of peace, it will be, we trust, with a renewed determination to persevere in that road which can alone lead to true national greatness.

Our own mechanics' institutes and kindred undertakings are just now commencing their autumnal session. We commend to them the consideration whether the principle of self-help cannot be more definitely recognised than has hitherto been the case. We hear with pleasure that the Working Men's College in Great Ormond Street is projecting an extension of its scientific programme in the approaching session. Let men and women be treated, not as artisans, mechanics, or gentlemen, but simply as men and women, standing toward the teacher only in the position of recipients of something which he feels the power and necessity of imparting; let no thought of any other relationship enter into this connection; and we predict for this and other equally admirable institutions a far wider popularity and usefulness than they have hitherto enjoyed.

REPLY TO PROFESSOR HUXLEY'S INAUGURAL ADDRESS AT LIVERPOOL ON THE QUESTION OF THE ORIGIN OF LIFE

II.

THE main argument must now be resumed: this having been only temporarily laid aside in order to inquire how far Prof. Huxley's "long chain of evidence" touched the real point at issue.

Having shown that, in reality, this has no immediate bearing upon the question in dispute, and having endeavoured to show to what extent the burden of proof rests with Prof. Huxley and others who affirm the universality of Redi's doctrine, it has now to be shown what evidence can be brought forward which may influence our judgment in the selection of one or other of the two possible modes by which alone the minute motionless specks of Living matter appearing in certain solutions can be supposed to originate. We must inquire, as much as possible independently of theoretical considerations, towards which of the two modes of origin—the germ or the germless—the evidence should induce us to lean.

It will be well, however, in the first place, to submit the following considerations to those who wish to form an unbiassed opinion upon the subject. Supposing that the minutest visible specks of living matter have originated from the growth of pre-existing *invisible* germs, there is still no reason whatever to induce us to believe that the invisible portions of Living matter would differ from visible portions in their power of resisting the destructive influence of heat. Whether visible or invisible, we are supposed only to have to do with Living matter, and it cannot be supposed that the qualities of this matter would vary simply *because* it existed in a state so minute as to elude our observation. What has been found to hold good, therefore, concerning the inability of visible Living matter to resist the destructive agency of heat may also be presumed to hold good for any invisible portions of Living matter. Invisible germs must be supposed to be amenable to the same influences as those which affect visible germs.[*] If the latter are destroyed by any given amount of heat, we should have every reason to expect that the former would also be destroyed under similar circumstances.[†]

It seems to me that *the only means* which we at present possess of throwing light upon this question, as to whether the minute Living things which appear under our eyes, in certain solutions, really derive their origin from pre-existing Living things, or spring into being *de novo*, is to subject other suitable solutions within hermetically sealed flasks, to a degree of heat which, on good evidence, is deemed adequate to kill all pre-existing Living things. If Living things are, notwithstanding the destructive exposure, subsequently to be found in the fluids when the flasks are opened, the evidence would seem to be strongly in favour of the *de novo* origination of such Living things—more especially if the heat employed had been great and long-continued. So far as all direct experiment and observation has hitherto gone, no Living thing whatsoever has been found to survive in a fluid which has been exposed for two or three minutes to a temperature of 110° C. And if we couple this fact with a due consideration of the fundamental unity in Nature of all Living matter, the supposition that any Living things—found in solutions that had been submitted to a *far greater* heat for two, three, or four hours—had braved this heat with impunity, would be an assumption seemingly much more improbable[*] than the only possible counter supposition, viz., that the Living things had been evolved *de novo*. The former supposition would be less likely to be true, because, instead of being consistent or harmonising with our general knowledge, it would seem to be a mere isolated fact bearing on its face the impress of grave improbability. *Bacteria* and fungus-spores which cannot, when made the subject of direct observation, resist the influence of a lower temperature, *are*, however, to be supposed capable of resisting the influence of a much higher temperature when their behaviour is watched by no human eye, though at a juncture when human prejudice emphatically requires that they should do so.[†] This extreme improbability—this isolated and otherwise unsupported notion—is cherished, whilst the other supposition, which is consistent with direct observation so far as it can go, and which is thoroughly in harmony with a great mass of scientific truth, is rejected. And why is it rejected? Because it is alleged that a great mass of human experience, having no immediate bearing upon this particular subject, and which is only related thereto by analogy, *seems* to make it improbable. And yet, as a matter of fact,—and although precisely the same reasoning is applicable against the alternative which they adopt—if the probability of a present *de novo* origination of Living things, after the fashion which is alone maintained, were to be admitted by every scientific man to-morrow, the whole body of human experience would remain perfectly undisturbed. A new probability, akin to a fact,[‡] and one of the most extreme importance, would, it is true, have been added to the sum-total of human knowledge, and the only loss or contradiction would be, that those who had hitherto cherished the formula *omne vivum ex vivo* as the expression of a fundamental truth, would have to give it up. Like many another dogma, which in the course of time is toppled over, this expression of an over-hasty, though formerly justifiable, generalisation, now that it has been shown to be incompatible with the latest teachings of science, would have to fall into the shade of cold neglect.

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[*] It was suggested to me by a friend that extreme smallness of size might be a protection against the influence of heat; in illustration of which possibility my attention was called to the fact that the water in capillary tubes will not freeze at times when that in larger vessels will become solidified. But although the water in the capillary tube does not freeze, this is due rather to some altered molecular condition of the fluid, and not because its temperature is not lowered just as much as that contained in the larger vessel which does freeze. I cannot see how smallness of size can confer immunity from alterations of temperature—more especially of any particles, however minute, which are contained within hermetically sealed flasks retained at a given heat for *four hours*.

[†] I have already pointed out (note p. 410) that the problem is utterly impossible to be solved if this be not granted as a probability; and that, similarly, without the concession that *invisible* crystalline matter resembled in its properties *visible* crystalline matter, it would be equally impossible to consider it as *proved* that a crystal can originate in a solution *de novo*, independently of a pre-existing crystalline germ.

[*] Although "germs," so far as we know them, are incapable of resisting the influence of great and prolonged heat, it was suggested by Prof. Rolleston, in the discussion which took place in the Biological Section on Sept. 21, that some germs *might* exist which were less amenable to the influence of heat, owing to the protein substances entering into their composition being in some peculiar isomeric state. We know for instance that *peptone*, which is a modification of albumen, is not coagulable by heat. All that we should deduce from this fact, however, seems to be this, that whereas ordinary albumen can, under the influence of heat, be made to undergo a certain isomeric modification by which it is rendered *insoluble*; this same albumen may, by a different process, be converted into *peptone*, a modification which is *not* capable of being converted into the *insoluble* isomeric condition by the application of heat. Too much stress must not be laid upon mere coagulability; and we must be, as it seems to me, further careful not to mix up our conception of this property too closely with another which is quite distinct, viz., as to the ability of Living things to withstand the influence of heat.

[†] Here we are brought face to face with the real difficulty. In order to explain the results of certain experiments, we *must* accept an apparent infraction of one or other of two rules which have hitherto been found to be universal, so far as human experience has gone. A Living thing has no more been known to be capable of surviving a temperatue of 150° C., than another Living thing has been *known* to arise *de novo*. Prof. Huxley, and those who think with him, appear to forget, in their present extreme unwillingness to give up the doctrine *omne vivum ex vivo*, that they can only retain it by abjuring another doctrine which has a similar seeming universality, so far as human experience has gone. We have nothing, then, but *probabilities* to guide us in our choice. Hence much difference of opinion will probably exist, till scientific men in general have come to adopt such physical doctrines concerning Life as those which Prof. Huxley has hitherto so ably taught.

[‡] All so-called "facts" are, to the philosopher, only possibilities which vary in their degree of probability. This is inevitable, owing to the "Relativity of Knowledge," so that possibilities, probabilities, and facts, merge insensibly into one another.